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Consumer trust in a health-enhancing innovation – comparisons between Finland, Germany and the United Kingdom

Short title: Consumer trust in a health-enhancing innovation

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Abstract

A health effect is a credence quality feature which is difficult for consumers to detect, and they need to be convinced of its trustworthiness. This study explores the role of trust-related arguments in Finnish, German, and British consumers' willingness to try a novel health-enhancing, non-edible product. Scientific evidence in particular would convince consumers, particularly Finnish ones, to try a product. Receiving recommendations from other users was more important for younger than for older respondents when it came to trying this type of product. Different marketing strategies may be needed to convince potential users of the benefits of a novel product.

Keywords: trust, consumer behaviour, willingness to try, health, innovation

Introduction

While a growing interest in health and well-being has been identified as one of the megatrends which affects consumers' preferences and purchase decisions in industrial societies, the demand for products that have positive effects on health is said to be on the rise (e.g. Yeoman 2012). For instance, functional foods that offer benefits for health and well-being have increased their market share as value-added products in developed countries (e.g. Bigliardi and Galati 2013). Similarly, modern technologies may allow for the modification of non-edible products in a way that provides additional health benefits for consumers. Thus far, examples of such products and academic research related to consumers' acceptance of them are rare.

Successful new product development requires sensitive responsiveness to customer needs and the customer's voice must be embedded in this proactive process (Cooper and Sommer 2016). To avoid market failures, consumers' perceptions of new innovations should be considered at an early stage of product development (see Siegrist 2008; van Kleef, van Trijp, and Luning 2005). According to Khan et al. (2013), even the product development process for new functional foods is still regarded as expensive and risky, and products can fail for different reasons. Different marketing strategies may be needed to convince various consumer segments of the product's benefits. Based on a large global survey (CPAS), enterprises that successfully developed new products used market analyses more frequently and expended significantly more effort in understanding customer needs than less successful enterprises (Markham and Lee 2013).

The success of innovations will depend on consumers' acceptance of the products as part of their daily lives (Siegrist 2008). Trust is one of the most important factors in the acceptance of health-enhancing products such as functional foods because health-related qualities are credence

characteristics (Grunert 2002). Consumers cannot directly experience the health benefits or do not usually possess the requisite knowledge for assessing the possible risks. Credence goods are sometimes called post-experience goods, referring to the facts that it is difficult for consumers to ascertain the quality even after they have consumed them, and professionals must verify the benefits (Darby and Karni 1973; Nelson 1970). Hence, consumers do not normally feel healthier because they have eaten or touched a product that is claimed to be good for their health. In addition, health effects are often quite abstract such as the decreased risk of certain types of diseases. As consumers cannot confirm the quality of these credence dimensions themselves, they seldom have other options than to believe the arguments provided by the industry. Trust has an impact on perceived benefit as well as on perceived risk, and it directly influences the affect evoked by new products. Trust in industry and attitudes towards new technologies are affected by cultural and social norms and thus may differ in different countries (Dolgopolova, Teuber, and Bruschi 2015; Grunert 2002; Siegrist 2000, 2008; Siegrist et al. 2007, 2015; Siegrist, Stampfli, and Kastenholz, 2008). As Doney, Cannon, and Mullen (1998) argue, the processes people use to decide whether and whom to trust are dependent upon a society's culture.

This article examines consumers' perceptions of trust-related arguments in three European countries – Finland, Germany, and the United Kingdom – based on secondary data originally collected to produce an insight to the market potential of a new health-enhancing product. Survey data was collected through online panels in 2016 (N=1,850). These countries were selected for the marketing research because new product development is taking place in Finland (patent pending, application number 20165932), and Germany and the United Kingdom represent important European markets for health-enhancing products (e.g. Malla et al. 2013). These three countries are culturally similar enough to enable comparison, but based on previous studies (e.g. de Mooij and Hofstede 2011; Hofstede 2001; Hudson 2006) they also differ in perceptions of trust and reactions to new products.

In individualist countries, such as these European countries, the behavior of consumers may be predicted from their attitudes toward products, services, and brands (de Mooij and Hofstede 2011). As culture plays a key role in determining how consumers react to a new product and how they accept it, understanding of consumer perceptions and diffusion patterns of products across countries is needed for the successful introduction of a new product (Yaveroglu and Donthu 2002).

The article aims to discuss the importance of trust-related arguments for the acceptance of novel health-enhancing products with credence characteristics. The study explored how typical arguments to assure the credence of health products are perceived and preferred in different markets. A totally new, non-existing and non-edible product that contains a substance that helps to prevent the onset of autoimmune diseases or alleviates symptoms was described to survey respondents. This product is not a medicine or ordered by a doctor but a health-promoting, daily used consumer good (cf. functional foods). The aim of the study was to explore the role of trust-related arguments in consumers' willingness to try this novel health-enhancing product by comparing different demographic groups (nationalities, age groups, genders). Instead of measuring trust at any readily available measurement scale, the study was based on inductive reasoning and quantitative exploring of different types of trust emerging from secondary data. The parallel aim was to demonstrate how this kind of typical, strictly targeted marketing research can be utilized in academic research with wider purposes.

Trust and consumer decision-making

Concept of trust

Some serious attempts have been made to create conceptual models that capture the concept of trust (e.g. McKnight and Chervany 2001), yet there is no consensus on how trust should be operationalised. In the research literature, trust has been conceptualised and measured differently in different contexts. A dual-mode model of cooperation (the TCC model) based on *trust* and *confidence* has been presented as a means of integrating most of the literature on trust and trust-related concepts (Earle, Siegrist, and Gutscher 2007; see Earle and Cvetkovich 1995; Luhmann 1995; Seligman 1997). To define trust, we refer to Earle et al. (2007, p. 4) who suggested that trust is the willingness "to make oneself vulnerable to another based on a judgment of similarity of intentions or values", while confidence means the belief that certain future events will occur as expected (see Siegrist 2008; Siegrist, Gutscher, and Earle 2005).

According to Earle et al. (2007), two basic types of trust, one within groups and one across groups, have been distinguished. Within-group trust includes social and interpersonal trust while across-group trust is called general trust. The difference in within-group trust is that social trust involves hardly any interaction and is thus based on limited information, while interpersonal trust is intimate and based on repeated interaction. Social trust has been found to strongly influence the perception of particular technologies. For instance, people who had social trust in companies or scientists perceived fewer risks and more benefits related to the technology than people who did not have social trust. Hence, trust had an indirect impact on the acceptance of, or willingness to buy, novel products (Siegrist 2000; Siegrist et al. 2007, 2008). As trust involves risk and vulnerability, it is especially important when familiarity is low. When people do not have elaborated knowledge about new technologies, they may cope with this by relying on social trust to reduce the complexity of decisions (Earle and Cvetkovich 1995; Earle et al. 2007).

Factors affecting consumers' trust

Perceptions of trust depend on how we process information and use it in decision-making processes, which is found to be culturally bounded. According to Hofstede's (2001) widely accepted cultural dimensions theory, in cultures with a high tendency to avoid uncertainty (e.g. German-speaking countries, and Finland), people seek regulations, rules, and formality; they search for truth, believe in experts, and show a strong resistance to change. Thus, people require more institutional protection and are less willing to trust someone from out-group (Chong 2003). In terms of a new product, members of these cultures may wait for their peers and try the product only after it reaches a certain level of penetration (Yaveroglu and Donthu 2002). Meanwhile, members of low uncertainty avoidance cultures (e.g. Anglo-Saxons) take risks easily and are more open to innovations, new technologies, and new experiences (de Mooij and Hofstede 2011; Hofstede 2001). In these cultures, people are willing to trust someone from out-group (Chong 2003) and there is strong belief in generalists and common sense (Doney et al. 1998).

Hence, it is not surprising that cultural differences have been observed in trust and attitude towards health-enhancing products, i.e. functional foods (Dolgopolova et al. 2015), also among several Western countries (Bech-Larsen and Grunert 2003; Dean et al. 2007; Siró et al. 2008). As Siegrist et al. (2015) suggest that cultural factors play a significant role in the acceptance of functional foods, we argue that similarly that can be the case with non-edible daily goods.

As regards trust in various institutions, such as EU, law, police, business, and government, Finland has emerged as one of the most trusting and the United Kingdom and Germany as the least trusting countries in the European Union (Hudson 2006; see Viklund 2003). Trust in authorities or institutions can be culturally bounded and related to the context as well as to prior experiences of risk hazards within societies (e.g. Dolgopolova et al. 2015; Frewer and Miles 2003).

Among various institutions, trust in business was observed as the lowest on average in the EU countries (Hudson 2006). Previous European studies on food safety and functional products have demonstrated a high degree of trust in health professionals and science, for instance, while the rating of trust in economic operators (e.g. manufacturers, supermarkets) and government tends to be low (Dolgopolova et al. 2015; Eurobarometer 2006; Frewer and Miles 2003; Hunt and Frewer 2001; Nocella, Romano, and Stefani 2014; Pieniak et al. 2007; Poppe and Kjærnes 2003). Also in terms of specific health information, a high level of trust for information provided by physicians was discovered, especially in contrast to all the other sources such as Internet, television, family, or friends and magazines (Hesse et al. 2005).

Trust in different sources may differ substantially, not only between countries but also within countries. When it comes to the impact of age, Hudson (2006) observed significant nonlinearities for trust in some institutions (e.g. the EU, big companies); trust declined and then increased. However, trust in some other organisations (e.g. government) significantly increased with age. In studies of health information, it has been found out that younger respondents are generally more trusting of most sources, such as Internet sources, than the older respondents (Hesse et al. 2005; Kwon et al. 2016; Ye 2011). Hesse et al. (2005) also discovered that older people tended to be more passive followers of physicians' orders while younger were more active consumers of health care. As regards food choices, younger Europeans have been found out to trust different information sources more than their older counterparts (Berg 2004; de Almeida et al. 1997; Hunt and Frewer 2001).

In terms of health information and gender, women were observed to be generally more trusting of most sources (Hesse et al. 2005). In a previous study on healthy eating, the reliance on health

professionals for food information was stronger for females (Holgado et al. 2000). As women have been found to rate health and food safety risks higher than men (Dosman, Adamowicz & Hrudey 2001), they may be most prone to purchase health products (Knight and Warland 2004) such as functional foods (Verbeke 2005; Siró et al. 2008). Retaining trust or losing it can also be related to gender. According to Haselhuhn et al. (2015), gender moderates responses to trust violations; women were less likely to lose trust and more likely to have trust restored after a transgression of trust.

The antecedents of trust can vary in different contexts, and thus, components of trust might be product-specific (Sichtmann 2007). Consumers seem to perceive trust and sources of trust in relation to food products differently from non-edible products. While investigating eco-labels in milk and mobile phones, Atkinson and Rosenthal (2014) suggested that in relation to health and food safety consumers take institutional information more seriously and regard it as more trustworthy than industrial information. Nevertheless, in countries such as the United Kingdom and Germany previous food hazards have eroded trust towards governmental sources of information and suspicions are rife towards institutions that misrepresent scientific knowledge for political or other opportunistic purposes (Berg 2004; Millstone and van Zwanenberg 2000; Poppe and Kjærnes 2003).

Furthermore, new technologies may be more acceptable in non-edible products than foods. Roosen et al. (2015) found that information on nanotechnology decreased estimates regarding consumers' willingness to pay for a food product, but not if technology was used to modify a non-edible food package. However, the idea of deriving health benefits by eating functional foods is already familiar for many consumers, while there has not been research on consumer perceptions of innovative non-edible products in which health benefits are obtained through the skin, namely by being in physical

contact with a product. In this study, we survey the role of trust-related arguments in consumers' willingness to try such a novel health-enhancing product.

Material and methods

This study is based on secondary data, namely survey-based marketing research, which was conducted to examine the market potential of a new product. The questions and arguments used in this survey were based on the common knowledge and practices of the marketing research company Designtutkimus Ltd who collected the data. The survey was conducted in Finland, Germany, and the United Kingdom because these markets were perceived as attractive to Finnish manufacturers. Despite cultural similarities, theory suggests that differences can be observed in perceptions of trust and reactions to new products (e.g. de Mooij and Hofstede 2011; Hofstede 2001; Hudson 2006). The survey was developed in Finnish and subsequently translated into English and German.

The online survey covered four themes: 1) the background of the consumers, 2) potential interest, 3) product promises, and 4) potential product concepts (results not reported in this article). In the survey, the new product was described as containing "*a substance that helps consumers to prevent the onset of autoimmune diseases, such as asthma, allergies, type 1 diabetes, celiac disease or rheumatism. The product alleviates symptoms and/or prevents symptoms from worsening if an autoimmune disease has already been diagnosed. The product is consumer-friendly and easy to use*." This kind of innovation is unknown to consumers thus far. Respondents were not given any information about the content or effect mechanism of the substance, but based on a novel innovation (patent pending, application number 20165932 at Finnish Patent and Registration Office), it is possible to modify human microbiota and immunomodulation and to reduce the risk of allergies and autoimmune diseases by exposing urban dwellers to nature-based materials

comprising diverse microbiome (see Grönroos et al. 2018; Nurminen et al. 2018; Parajuli et al. 2018).

The data were collected through national internet panels: the Norstat Panel in Finland and the Survey Sampling International online-panel in Germany and the United Kingdom. These internet-panels aim to be a representative sample of the target population; they consist of volunteers who are committed to respond to various consumer surveys. A total of 1,850 respondents over 18 years old from the three countries were randomly selected from the panels, and they completed the online-survey in May 2016 (Finland: N=631, Germany: N=609, UK: N=610).

In this study, we used three survey questions to explore the role of trust-related arguments in consumers' willingness to try a novel health-enhancing product. These questions included arguments related to various types of trust. First, respondents were asked which reasons would make them want to try the new product. The nine presented reasons concerned the prevention of diseases, the cure or alleviation of diseases, and trust in institutions or other consumers (see Figure 1). Second, respondents were asked which matters would prevent them from trying such a product. Eleven presented reasons were related to beliefs in the causes of the diseases, product attributes, product use, and trust in products and distributors (see Figure 2). Third, the respondents were instructed to choose which of the arguments – all 14 related to various sources of trust – would convince them to try a new product that has health effects (see Figure 3). In all three questions, the respondents were instructed to choose as many options as they wished.

The key demographic characteristics of the respondents are presented in Table 1. In terms of age structure, the Finnish sample corresponded rather well with the characteristics of the Finnish adult population, but male respondents were overrepresented (see Official Statistics of Finland 2017a).

The German sample in particular was representative in terms of gender, but the oldest age group (65 or over) was underrepresented in the German and British samples (see Eurostat 2017). Therefore, the share of retired respondents was lower in Germany and the United Kingdom than in Finland, where older people are often technologically advanced and active in online-panels (Official Statistics of Finland 2017b). In turn, the share of part-time employees was lower among the Finnish respondents than it was among the German or British participants, which is probably due to the lower participation in part-time work in Finland (see Eurostat 2015). In relation to health issues, the Finnish participants responded more often than the others that they regularly monitor the state of their health ($p<0.0001$), use natural health products less often ($p<0.0001$), and consider it less important to follow a very healthy diet ($p<0.0001$) or to eat organically grown food ($p<0.0001$).

[Table 1 near here]

Data gathered through the questionnaire were stored and analysed using SPSS software (Version 22, 2013). The results are reported in the following sections via the descriptive statistics of different variables. On account of the categorical data, cross-tabulation was used to examine the relationships between trust-related arguments and background characteristics. The significance of the associations and statistical differences between the groups were tested with Chi-Square analyses and two-sided Fisher's exact test.

Results

Differences between the countries

The most important reason for trying a novel health-enhancing product was related to trust: for over one-third (36%) of all respondents one reason to try a product was that the substance is sold by a reliable distributor, such as a pharmacy (Figure 1). However, there were differences between the three countries. A reliable distributor, such as a pharmacy, was a more important reason for trying the product for Finnish compared to British or German respondents ($p<0.0001$). While reasons related to the prevention or cure of diseases were important in all countries, the British respondents in particular also highlighted the fact that the substance is manufactured by a reliable brand ($p<0.0001$). British consumers responded the most often – and Finnish the least often – that they could try the product after their friends had tried it ($p<0.0001$).

[Figure 1 near here]

As regards reasons not to try a new health-enhancing product, arguments related to trust in product effect and distributor were among the most selected (Figure 2). The Finnish respondents considered more often than the others, especially the British respondents, that the product promise is not credible if the product is sold in markets or health food shops ($p<0.0001$). The Finnish participants also responded more often than the others that one reason for not trying a new product is that they do not believe the substance is effective ($p<0.0001$). Instead of trust-related arguments, an expensive price tag was clearly the most important reason for not trying a product as far as the British respondents were concerned; this was selected more often than in other countries ($p=0.004$). The British and German consumers responded more often than the Finnish that none of the reasons would prevent them from trying such a product, but they love to try new things.

[Figure 2 near here]

Approximately half of all respondents would be convinced to try a new health-enhancing product based on scientific evidence about the benefits (Figure 3). Trust in science was especially indicated by the Finnish respondents, who highlighted more than the others that the substance has been proven to be effective scientifically ($p<0.0001$) or in clinical studies ($p<0.0001$), and that it has been tested in laboratories around the world ($p=0.002$). While arguments related to science were also the most important for the British respondents, they would be more likely to be convinced than the others to try a new product if the substance is manufactured by a well-known pharmaceutical company ($p<0.0001$) or sold in health food shops ($p<0.0001$). For the German respondents a slightly more convincing reason than the scientific evidence was that the substance is recommended by specialist physicians; this was selected more often by the German respondents compared to the others ($p<0.0001$). Furthermore, the German and British respondents would be more likely to be convinced than the Finnish respondents to try a product if friends and relatives had found the substance useful ($p<0.0001$), it is recommended by users ($p<0.0001$), or it is popular in the US ($p<0.0001$). Meanwhile, the Finnish respondents stressed the domestic origin of the substance more than the other nationalities ($p<0.0001$).

[Figure 3 near here]

Differences between the age groups

As regards the age groups, statistically significant differences emerged in respect of some reasons for trying a new health-enhancing product (Table 2). A reliable distributor, such as a pharmacy, was a more important reason for trying a new product for the oldest age group (65 years or over) than the others. Meanwhile, the youngest age groups (under 25 years, 25–44 years) responded more often than the older age groups that they could try the product after their friends had tried it.

[Table 2 near here]

In terms of reasons for not trying a new product, the two youngest age groups responded more often than the older ones that they do not believe such products could prevent diseases or their symptoms if they are not edible products or similar (Table 2). The middle-aged groups (25–44 and 45–64 years) responded more often than the others that none of the reasons would prevent them from trying such a product, but they love to try new things. In addition, further analysis showed that in Germany the oldest age group were more likely to consider that the product promise is not credible if the product is sold in markets or health food shops ($p=0.022$).

Among all of the respondents, the two oldest age groups were more likely to be convinced to try a new product if the substance has been proven to be effective scientifically or in clinical studies, or if it is recommended by specialist physicians (Table 2). Meanwhile, the younger age groups were more convinced than the older age groups by the fact that their friends and relatives had found the substance useful, that it was recommended by users, sold in health food shops, developed in a university, or it is popular in the US. Further analysis also indicated that in the United Kingdom the oldest age group stressed more than their younger counterparts that the substance had been tested in laboratories around the world ($p=0.023$).

Gender differences

In terms of reasons for trying a new health-enhancing product, female respondents deemed it more important than male respondents that the substance is sold by a reliable distributor, such as a pharmacy, or it is manufactured by a reliable brand (Table 3). Meanwhile, as a reason for not trying

a product, men responded more often than women that they believe in medicines, not in such products. In addition, further analysis showed that in Germany male consumers were more likely to try the product after their friends had tried it (p=0.007).

[Table 3 near here]

The female respondents would be more likely to be convinced to try a new product by several arguments in comparison with their male counterparts, namely that the substance is recommended by specialist physicians, sold in pharmacies, recommended by users, and manufactured by a well-known pharmaceutical company (Table 3). In turn, men were more likely to emphasise the popularity of the substance in the US. Further analysis also revealed that female respondents in the UK were more likely than male respondents to emphasise that the substance has been scientifically proven to be effective (p=0.004)

Discussion

This study conducted in three European countries indicated the importance of trust-related arguments in convincing consumers to try novel products that have purported health effects. In general, a reliable distributor, such as a pharmacy, was found to be a more significant reason for trying a new health-enhancing product than the prevention, cure, or alleviation of diseases. Meanwhile, arguments indicating a lack of trust in product effect or distributor (i.e. market or health food shop) were among the most important reasons for not trying the new product. In general, institutional sources of information such as science and physicians would convince consumers to try a health-enhancing product rather than reasons related to industry or fellow consumers' recommendations. These results are similar to those in previous studies related to trust in health

information (Hesse et al. 2015) and food safety (e.g. Eurobarometer 2006; Hunt and Frewer 2001). Nevertheless, our study also indicated the cultural differences that exist in perceptions of trust-related arguments, especially in terms of institutional trust (see Dolgopolova et al. 2015; Frewer and Miles, 2003).

The British respondents highlighted more than their German and especially their Finnish counterparts the importance of a reliable manufacturer or brand, and a health food shop as a distributor. Furthermore, they would be more willing to try the product after their friends had tried it. These differences suggest an open attitude towards innovations, new technologies, and new experiences among members of low uncertainty avoidance cultures (e.g. Anglo-Saxons), while in cultures with a high tendency to avoid uncertainty (e.g. Finland, German-speaking countries) people would rather search for truth and believe in experts (de Mooij and Hofstede 2011; Hofstede 2001; Yaveroglu and Donthu 2002). Although consumers seem to perceive trust in relation to food products differently than non-edible products (Atkinson and Rosenthal 2014), serious food scandals in the United Kingdom and German-speaking countries (Millstone and van Zwanenberg 2000; Poppe and Kjærnes 2003) may have affected the respondents' lower social trust compared to Finland. German distrust has been found to be related to specific institutions, such as the media and manufacturers, while medical doctors and research institutions were among the most trusted stakeholders in the field of functional products (Dolgopolova et al. 2015; Poppe and Kjærnes 2003). The German respondents' emphasis on the recommendations of specialist physicians may be due to the German family doctor system, which means that one selected doctor takes care of the whole family. Confidence in doctors has also been observed to be at a high level in the UK despite the erosion of public trust in the healthcare system (Calnan and Sanford 2004; see Kwon et al. 2015).

Meanwhile, the Finnish respondents' emphasis on the scientific evidence of health benefits reflects the high trust in science and research generally in Finland. Trust in science has not declined in recent years (Tiedebarometri 2016; see Hudson 2006). de Almeida et al. (1997) found in their study that Finnish people had the highest trust scores for most sources of food information, which may be affected by the high level of societal trust and absence of serious food scandals in Finland in general (see Niva and Mäkelä 2007). While the Finnish respondents in our study highlighted the domestic origin of the substance more than the British and German respondents (see Ryan 2008), peer recommendations were less important reasons for trying the product compared to the others. The Finnish respondents' emphasis on a pharmacy as a reliable distributor may reflect the strict regulations concerning pharmacies in accordance with the *Medicines Act and Degree* in Finland.

As the Finnish respondents used natural health products and organically grown food less often than the respondents in the other countries, they would understandably be less convinced by health food shops as distributors. Although almost a third of Finnish people have been reported as using natural health products, especially women (Häkkinen and Alha 2006), some people have a very critical attitude towards them. Meanwhile, both the UK and Germany are significant markets in Europe when it comes to functional and organic foods and natural health products (Baker et al. 2006; Malla et al. 2013).

Our study showed that perceptions of trust-related arguments differed not only between the three nationalities, but also between the age groups and genders (see Hudson 2006). The study indicated that older age groups would be more likely to be convinced by institutional sources of trust, such as science, physicians, and the pharmacy (see Hesse et al. 2005; Kwon et al. 2016). Meanwhile, the younger respondents would be more likely to be convinced by arguments related to trust in fellow consumers (e.g. friends and relatives) and industry (e.g. health food shops or markets as

distributors). These results are in line with previous studies on food choices which showed that the use of health professionals as an information source increased with age, while the use of relatives, friends and supermarkets, for instance, decreased with age (de Almeida et al. 1997; Holgado et al. 2000).

On the basis of this study, it is not possible to evaluate whether there is a generational effect or a life-phase effect attached to trust in various sources of information. Does trust vary over a life cycle or are sources of trust changing as peer recommendations and user-generated content have become abundant in digital channels? Increasing information overload may cause difficulties in determining who can be trusted, and people may use general trust as cognitive heuristics to simplify the formation of an opinion (Metzger and Flanagin 2013). Recent discussions on the post-truth age refer to circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief (Keyes 2004). For instance, the global Edelman Trust Barometer (2017) indicated that trust in institutions – business, government, NGOs, and the media – is declining. It has also been suggested that distrust in formal institutions leads to an increase in the value of informal networks (Dolgopolova et al. 2015). Hence, consumers may voice more trust in product information created by other consumers (Cheong and Morrison 2008; Flanagin et al. 2014). In relation to health, reliance on personal judgments of risk has also been suggested to be on the increase (Rowe and Calnan 2006). Nevertheless, according to the most recent ICCS 2016 study, a trustful generation seems to be emerging in Finland at least; Finnish teenagers' trust in societal institutions and actors was higher than in 24 other countries that were evaluated, and had even increased since 2009 (Mehtäläinen, Niilo-Rämä, and Nissinen, 2017).

This study showed that women would be more inclined than men to be convinced by several arguments related to both social and interpersonal trust. Meanwhile, men responded more often that

they believe in medicines, not in such products, which is in line with the greater use of natural health and organic products (e.g. Häkkinen and Alha 2006) and functional foods by women (e.g. Verbeke 2005; Siró et al. 2008). Similarly, women have been found to be generally more trusting of most sources of health information (Hesse et al. 2005). However, studies on food safety, for instance, have indicated varying results related to gender differences (e.g. Berg 2004; de Almeida et al. 1997), which means that further research is needed to obtain more detailed information on possible gender differences in terms of various types of trust.

The limitations of this study are related to the data and operationalisation of the theoretical constructs. The samples were rather similar in Germany and the UK while in the Finnish sample, the proportion of older, retired people was higher, for instance. As the proportion of immigrants is higher in Germany and the UK than in Finland, these respondent groups were probably more multi-cultural and heterogeneous in terms of their background. These differences in the samples may have affected those results indicating a difference between Finland and the two other countries.

This study suggests that there may be differences between different consumer markets in perceptions of and reactions to trust-related arguments. Further research is definitely needed to analyse consumers' perceptions of trust in relation to health-enhancing innovations. This study explored arguments related to various sources of trust commonly used in marketing surveys without theoretical operationalisation of trust. The study indicated that it is possible to use this kind of marketing research as secondary data, but a more detailed analysis of the role of trust in consumer decision-making would require a thorough operationalisation of the concept of trust in a survey. In future studies the measurement scales should be designed to enable multivariate statistical analyses. The respondents' own health or their family members' health should also be taken into account since it may affect their perception of novel health-enhancing innovations.

Conclusion

In terms of health benefits, the role of communicating with and educating consumers is crucial because they cannot experience the health effects of novel products directly. Credence qualities may generate perceived risk and uncertainty, especially when information is inconsistent and trust in authorities is low (Ronteltap et al. 2007). This study demonstrated that it is crucial to take consumers' perceptions of trust into account in developing, launching, and marketing health innovations, and especially in entering to global markets (see Dolgopolova et al. 2015; Siegrist et al. 2015). Different marketing strategies may be needed in different countries or for different consumer segments to convince prospective users of the health benefits of the novel product.

Scientific evidence of the health benefits was highlighted in all three European countries, especially in Finland. Therefore, it is not recommended to enter the market without conducting proper scientific research on the health effects. There is a risk that consumers will confuse the new health products with natural health products which do not have as established a position in consumers' minds in Finland as, for instance, in the United Kingdom. Furthermore, it seems that a crisis in one sector, for instance in the food sector, may influence social trust and the acceptance of new products in general. The role of arguments related to interpersonal trust (e.g. recommendations by friends and relatives) varies between consumers, but they seem to convince British and German consumers in particular, as well as younger age groups. Therefore, user-generated content is recommended in marketing novel products (see Rutsaert et al. 2013). Cheong and Morrison (2008), for instance, have suggested that marketers may use the media to influence opinion leaders, and in that way indirectly influence consumers who follow opinion leaders vis-à-vis product recommendations and

information. Hence, careful customer analyses are needed to create tailored messages for various consumer segments.

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